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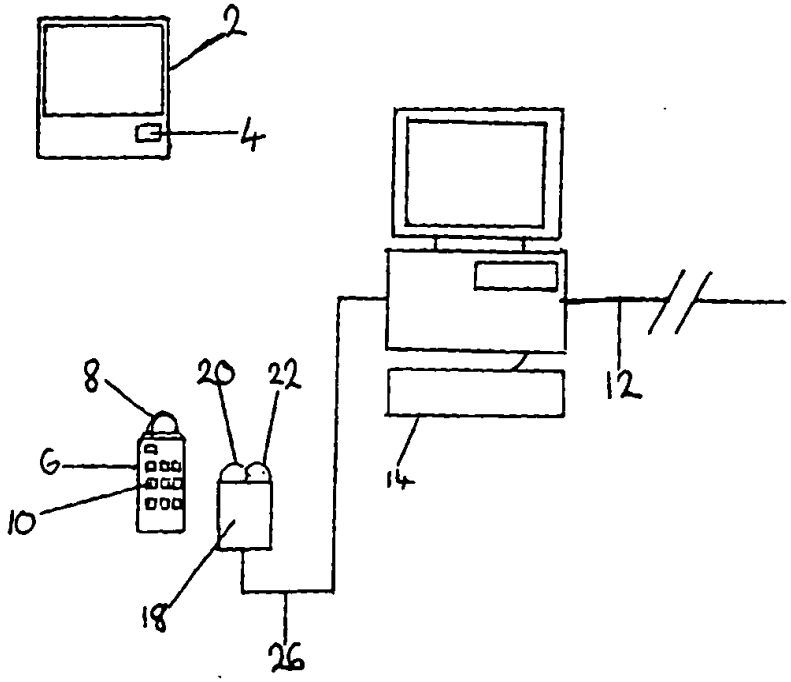
(54) Title: METHOD FOR INTERFACING TELEVISION TO A MULTICAST NETWORK

(57) Abstract

A system is disclosed for eliminating commercial advertising from television broadcasts, particularly commercial free to air television broadcasts. The system operates by monitoring the broadcast to determine when the programme that is being broadcast is interrupted by a commercial advertising break. When the commercial advertising begins, the system broadcasts this information over a data network such as the Internet using a multicast protocol. A receiver unit (18), which may be provided connected to a personal computer (14) in the user's home transmits an infrared signal to the remote control receiver (4) of the television set (2), which causes the set to perform a desired function such as muting the audio output, or changing to a different channel. If the system changes to a different channel, a channel may be selected having other content, such as that from a local video disk or the like.



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METHOD FOR INTERFACING TELEVISION TO A MULTICAST NETWORK

Background - Field of Invention

This invention relates to the Remote Control of Television, in particular using information gathered remotely and broadcast over a multicast network to control a television.

Background - Discussion of Prior Art

Commercially broadcast, free to air television typically operates on a revenue model where it is funded by advertising. As a result television programs are interrupted and segmented by a large number of commercial advertising breaks. While some viewers do not mind the advertising, some viewers prefer not to watch or listen to the advertising. Usually a person who does not want to watch the advertising will mute the sound from the television set or change the channel to another station, for example by use the television remote control. The viewer must remember to un-mute the television, at the end of the advertising.

The concept of a device, which automatically mutes television advertising, is not new. Devices, which can mute television advertising, have been proposed many years ago and some have been commercially manufactured. To date none of these devices have become a commercial success.

Wolzien US Patent 5,761,606
Utilizes the vertical blanking interval or the non-displayed portion of the signal to display the online information provider related to the content displayed on the television. While this system does not directly relate to television advertising, the information displayed in the vertical blanking interval could be used to transmit data which could be used to mute and un-mute the television. Using this type of system limits its universal

application, as it would require the consent and co-operation of the television broadcaster, who at the least would be hesitant to produce a device, which would limit their advertising audience.

Japanese Application number: 03269307 (URATA EIKICHI)
Describes a television receiver that analyses the broadcast signal and controls a VTR by turning-on the infrared remote control signal for the stop/cancel of recording when the CM is inserted in the middle of a programme, and photodetecting the signal at the VTR.

Japanese Application number 04113478 (INOUE TORU)
Describes a TV receiver which switching to another channel during commercials. This system relies on analyzing the audio signal.

Japanese Application number: 08085665 (OKUBO TSUYOSHI)
Describes a system where the TV changes channel during the commercial break. This system analyses the audio signal to detect advertising.

Japanese Application number: 09205771 (MATSUOKA YOSHIAKI)
Describes a method to automatically fast forward commercials by detecting changes in the Audio and Video Signals.

The methods described by EIKICHI, TORU, TSUYOSHI and YOSHIAKI all work by analyzing broadcast signal. This type of system has inherent limitations. The device must have its own TV tuner or the device must be built into the television. Both of these are costly. In addition these methods rely on analyzing Television broadcast signals. Analyzing Broadcast signals can be ineffective as Television broadcasters may modify their protocols to defeat such devices.

Japanese Patent Application 08145357 (SONY CORP) (YAMASHITA KEITARO)
Describes a television broadcast system to allow the broadcast of localized content (particularly advertising) by broadcasting multiplex signals the advertising

corresponding to an area in which a viewer is resident automatically, and provides an output of a corresponding commercial video and audio signal. The method describes by Keitaro is reliant on agreement of the broadcaster, and cannot be implemented without the broadcasters co-operation.

A method has been proposed which uses a radio paging network to broadcast channel information. This method is disadvantageous, as it is reliant on radio coverage and requires extensive infrastructure to be set up.

Objects and Advantages

Several alternative or cumulative objects or advantages of my invention are:

(a) To provide a simple and low cost method of muting television advertising.

(b) To provide a method of muting television advertising which television broadcasters cannot defeat.

(c) To provide a method of muting television advertising that does not require a large amount of infrastructure development support a large number of users.

(d) To provide a number of other features beyond simply muting television advertising so as to provide greater value to the consumer and to make to product easier to market.

(e) To allow simple programming of a videocassette recorder to record programs with the added benefit that commercial breaks are skipped.

(f) As my proposed method requires the development of infrastructure to support this, another object of this invention is to develop a means by which revenue can be derived as to make this invention commercially viable.

(g) To provide an apparatus, system or method that overcomes one or more disadvantages with prior art systems, or which at least provides the public with a useful choice.

Further objects and advantages of my invention will become apparent from a consideration of the drawings and ensuing description.

Description of Drawings

Fig 1. Is a schematic block diagram of an overview of the data distribution in accordance with the present invention

Fig 2. Is a schematic block diagram of operation of the invention in the household

Fig 2a Is a schematic block diagram of the basic components of the serial IR data transceiver of the present invention

Fig 3. Is a schematic block diagram of operation in the control center in accordance with the present invention

List of Reference Numerals

2	Television
4	Television IR receivers
6	Television remote control
8	Television remote control IR transmitter
10	Television remote control keypad
12	Internet Connection
14	Personal Computer
16	Modem
18	Serial IR Transceiver
20	IR Receiver
22	IR Transmitter
24	Microprocessor
26	Serial Data Cable
28	Channel Data Source
29	Server
30	Network Routers

32 Channel Data Receivers
34 Controls Station
36 Data Network
38 Individual House Hold
40 Keyboard
42 Digital signal analyzer
44 Data Feed from Television Broadcast Station
46 Video cassette recorder

Summary of the Invention

The present invention broadly consists of an apparatus or system for modifying the output of a television receiver in response to a characteristic of the output, and includes:

monitoring means for monitoring an occurrence of the characteristic,

information server means to broadcast information indicative of the occurrence of the characteristic over a data network, and

receiver means, which receives the broadcast information and provides a control signal to the television receiver to modify the output thereof.

The present invention also provides a method for modifying the output of a television receiver in response to a characteristic of the output, the method including the steps of:

monitoring the output for the occurrence of the characteristic,

broadcasting information indicative of the occurrence of the characteristic over a data network,

receiving the broadcast information, and

providing a control signal to the television receiver to modify the output thereof.

Detailed Description of Preferred Embodiment

Referring to Fig 2a, a Serial IR data Transceiver 18 is shown consisting of a microprocessor 24 which can receive input from an Infrared ("IR") Photo-diode 20 and transmit IR data using an IR LED 22. The serial IR data transceiver also receives and transmits serial data using serial data cable 26.

Fig 2 Shows a Television Receiver Remote control, which may operate the Television 2 by sending serial IR Data which is emitted from the Remote controls IR LED 8 and received by the Television's IR receiver 4. The IR serial data transceiver 18 is placed in the line of sight of both the Television 2 and the remote control 8. The transceiver 18 can detect which channel is selected by the user when the user presses the remote control keypad 10 by monitoring the output of the remote control IR transmitter 8 with its IR receiver 20. The IR Transceiver 18 communicates with a Personal Computer ("PC") 14 using a data cable 26. The IR Transceiver sends the PC a string of information telling the PC what channel is currently being watched. The PC 14 receives data from an Internet connection 12, which tells the Television if the television channel being watched is playing a program or advertising. Upon the PC receiving a signal from the Internet that there is a transition from program to advertising the PC signals the IR transceiver 18 to send a mute command to the television 2. At the finish of the advertising segment the PC signals the IR Transceiver to send an un-mute command to the television.

Fig. 1 shows a general overview of how the data is sent from a single source to multiple households. The control station 34 broadcasts channel data from a server 28. The data is then forwarded through routers to the personal computers 32a and 32b of individual

subscribers. Because a multicast protocol is used a single packet of data transmitted from the data source 28, may be received by two or more different subscribers 38a, 38b who may be geographically remote.

Fig. 3 shows the control room where channels are monitored as to whether they are showing advertising or programming. The information on whether the channels are playing advertising or programming is input in to the server. This information may be input into the server 29 in real-time by an operator via a keyboard 40 who is watching television 2a 2b 2c etc, or by automatic means such as from a digital signal processor 42 or by receiving information from the television broadcast station 44. This information is then broadcast using the Internet 12.

The operation of the present invention will now be described.

This invention consists of a device, which is placed, in line of site of both the television and the television's remote control. By "listening" to the signals from the remote control the device is aware of what channel on TV is being watched. By receiving signals from a remote data source the device can determine whether the channel being watched is conveying a television program or advertising.

The invention described allows television advertising to be muted. The invention relies on the principle that a central control room can transmit channel information to many consumers simultaneously in real time using the Internet as the medium for transmitting data. Thus for a consumer to use this device to mute television advertising, a connection to the Internet is required. Thus this invention is most applicable to consumers who have a permanent Internet connection such as a cable modem.

Connecting the device to a personal computer, which in turn connects to the Internet, has a number of advantages:

1. The customer if already connected to the internet is already paying a subscription

2. The Graphic User Interface (GUI) of the computer can be use for configuring the device.
3. The customer can use the computers Internet browser to access additional features.
4. The device can be manufactured relatively cheaply because the device can utilize the power supply, processing power, GUI and Keyboard of the computer.

The device for blocking television advertising can typically ship in a box packaging. Contained in the box is the Serial IR Transceiver, an instruction manual and application and driver software for the personal computer. The blocking device is installed by connecting the Serial IR Transceiver's data cable to the computer. The Serial IR Transceiver is placed within line of sight of both the Television and the remote control. Software is then loaded on the PC so that the personal computer can recognize and communicate with the Serial IR Transceiver. Additionally an application to control the Serial IR Transceiver 18 and communicate with the Remote Server 28, and provide a GUI for the consumer to configure the device, is installed. After loading the software the consumer configures the Serial IR Transceiver to recognize the TV remote control and Television, either by inputting into the software the Brand and Model of the television or by pressing buttons on the remote control, so that the Serial IR Transceiver recognizes them and determines the data format of the remote control. The consumer then configures the application to know which channel number the television is programmed to relates to which station, for example:

Channel 1: CBS
Channel 2: NBC
Channel 3 CNN news.

The consumer then sets preferences such as when advertising occurs whether advertising would be muted or the television would skip channels until the advertising is finished.

When the consumer turns the television on using the remote control the PC detects which channel is being watched from the remote control's signal. The computer receives packets of information relating to the status of the channel. When there is a transition from program to advertising the computer will signal the IR transceiver, for example to mute the television, and at the end of the advertisement it will signal to un-mute the television.

In addition to simply muting or skipping advertising, this invention can be applied to controlling a videocassette recorder (VCR) to allow the simple programming of the VCR and allow the VCR to skip the adverting. Usually programming a VCR by conventional means is difficult. The user configures PC based software to recognize the VCR and it's channel settings. Thus the PC can start the VCR recording and stop the VCR recording.

Thus to use this service the consumer views an HTML page provided by the channel information service provider and selects the program which is desired to be recorded. Thus when the desired program begins the PC receives a packet of information upon which the PC sets the VCR to the appropriate channel and gets it to begin recording. The PC stops the VCR from recording during each advertising break and stops the recording at the finish of the program. This has the further advantage over setting a VCR by conventional means in that it overcomes the problem of incorrect recording resulting from television stations not running to schedule.

This invention also has business applications, particularly for televisions sited in public places with high numbers of viewers, for example televisions sited in airport lounges and hotels. When an advertising break begins the television skips to the televisions external Audio Video (AV) input, where the television receives audio and video signals from a device such as a Video cassette recorder, video compact disk player, or a solid state digital video player. Thus during the commercial break the television does not play the television stations advertisements, but instead plays targeted advertising aimed at the audience of that particular location. Thus the Television broadcasting company effectively provides the program content, however it receives no commercial advertising

viewers. No matter what TV channel is selected, during the commercial break the advertising from the external AV source is selected. Thus it is possible to broadcast advertising on all the television channels at a particular location. Thus highly targeted advertising can be broadcast on all channels at a very low cost compared with buying television advertising by conventional means.

Thus for example a Hotel could advertise its own products and services on the television as well as sell advertising to other companies who wish to advertise their products and services specifically to the hotel's guests.

As the device for muting channels is connected to a two-way data network channel, the information service provider can monitor the number of people using the service and their television watching preferences. This would allow a very effective method to allow the rating of television programs from a very large audience and provide a much more accurate method than current television rating methods allow.

Further advantages include the provision of wake up calls, the ability to encrypt to protect revenue, and separate targeted advertising.

As well as skipping or muting advertising this device could be used to allow people to avoid seeing or hearing program content they might deem offensive such as offensive language or offensive behavior. Thus the consumer could feel free to watch programming without fear of being exposed to content that they did not want to see.

A specification for linking consumer appliances IEEE 1394 has been proposed, which allows consumer devices to interconnect and even connect directly to the Internet. For the millions of analog televisions still in use, manufacturers have proposed to produce set top boxes, primarily for allowing analog TVs to access digital television.

With the increases in networkability of consumer appliances, for example under the specification of IEEE1394, it will become practical to directly connect the home

television directly to the home PC or even directly to the Internet. With the availability of IEEE 1394 in consumer devices it will possible to directly connect a television to the Internet.

Thus it will be seen that the invention provides a reliable, easy to implement and low cost way to mute television advertising.

While my above description contains many specifics, these should not be construed as limitations on the scope of the invention, but rather as exemplifications of one preferred embodiment thereof. Many other variations are possible. For example my description and diagrams show each household as having a PC, which allows the IR transceiver to connect to the Internet. It is quite possible to connect the IR transceiver directly to the Internet and eliminate the need for a computer. The embodiment illustrated shows a device, which uses wire connections, however a wireless device is possible. The embodiment illustrated uses data, which is broadcast using a multicast method, however point to point or Uni-cast methods are also practical. In addition other similar methods of transmitting data could be considered practical such as a GSM telephone network short message service. This description describes the Serial IR port as a discrete device, however many PC already have an integrated serial IR which may be adapted Accordingly, the scope of the invention should not be determined not by the embodiment illustrated, but by the appended claims and their legal equivalents.

Claims

I claim:

1. Apparatus for modifying the output of a television receiver in response to a characteristic of the output, the apparatus including:

monitoring means for monitoring occurrence of the characteristic,

information server means to broadcast information indicative of the occurrence of the characteristic over a data network, and

receiver means, which receives the broadcast information and provides a control signal to the television receiver to modify the output thereof.

2. Apparatus as claimed in claim 1 wherein the receiver means includes a television remote control transmitter to provide the control signal to a remote control receiver of the television receiver.

3. Apparatus as claimed in claim 2 wherein the receiver means also includes a remote control receiver to receive signals from the remote control transmitter of the television receiver.

4. Apparatus as claimed in claim 1 wherein the information server means broadcasts the information over the Internet using multicast protocol.

5. Apparatus as claimed in claim 1 wherein the information broadcast by the information server means is encrypted and requires a key to be deciphered.

6. Apparatus as claimed in claim 1 wherein the control signal causes the audio output of the television receiver to change from an active state to a mute state.

7. Apparatus as claimed in claim 1 wherein the control signal causes the audio output of the television receiver to change from a mute state to an active state.

8. Apparatus as claimed in claim 1 wherein the control signal causes the channel to which the television receiver is tuned to change to another channel.

9. Apparatus as claimed in claim 8 wherein the other channel comprises a local source.

10. Apparatus as claimed in claim 9 wherein the local source comprises a video player.

11. A method for modifying the output of a television receiver in response to a characteristic of the output, the method including the steps of:

monitoring the output for the occurrence of the characteristic,

broadcasting information indicative of the occurrence of the characteristic over a data network,

receiving the broadcast information, and

providing a control signal to the television receiver to modify the output thereof.

12. A method as claimed in claim 11 including the step of providing the control signal to a remote control receiver of the television receiver.

13. A method as claimed in claim12 including the step of receiving signals from the remote control transmitter of the television receiver.

14. A method as claimed in claim 11 including the step of broadcasting the information over the Internet using multicast protocol.

15. A method as claimed in claim 11 including the step of encrypting the broadcast information whereby a key is required to decipher the information.

16. A method as claimed in claim 11 wherein the step of providing the control signal comprises the step of causing the audio output of the television receiver to change from an active state to a mute state.

17. A method as claimed in claim 11 wherein the step of providing the control signal comprises the step of causing the audio output of the television receiver to change from a mute state to an active state.

18. A method as claimed in claim 11 wherein the step of providing the control signal comprises the step of causing the channel to which the television receiver is tuned to change to another channel.

19. A method as claimed in claim 18 wherein the step of causing the channel to change comprises causing the channel to change to a local source.

20. A method as claimed in claim 19 wherein the step of causing the channel to change to a local source the local source comprises causing the channel to change to a channel for receiving the output of a video player.

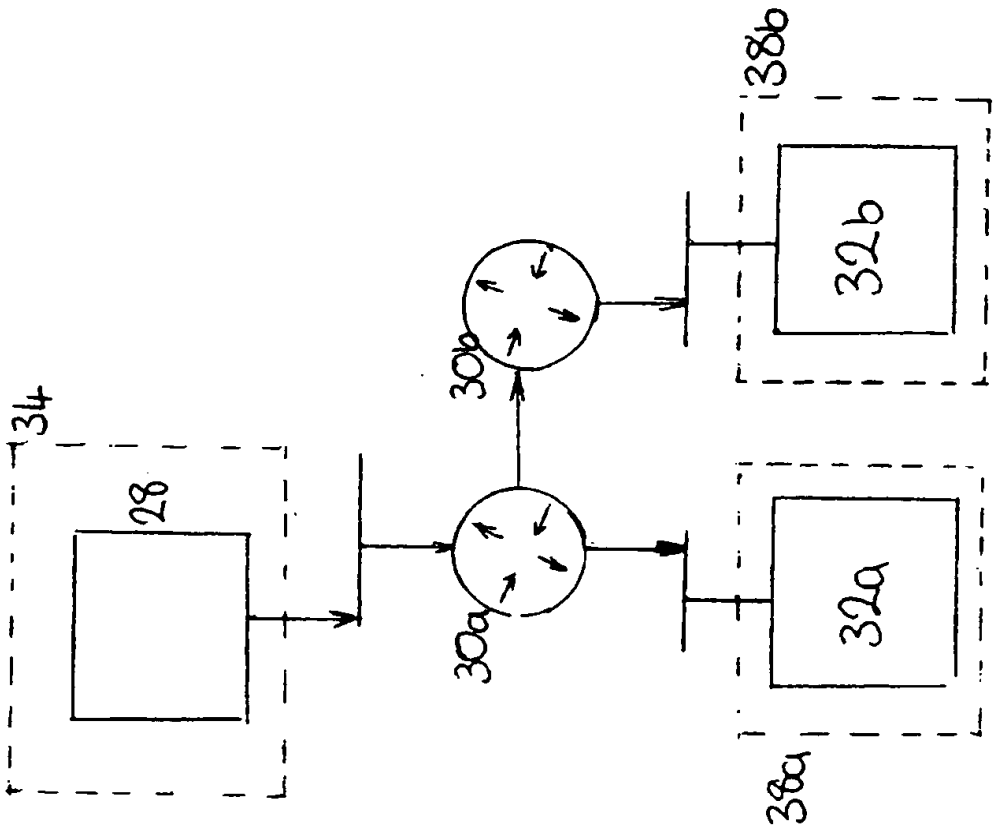

Fig 1

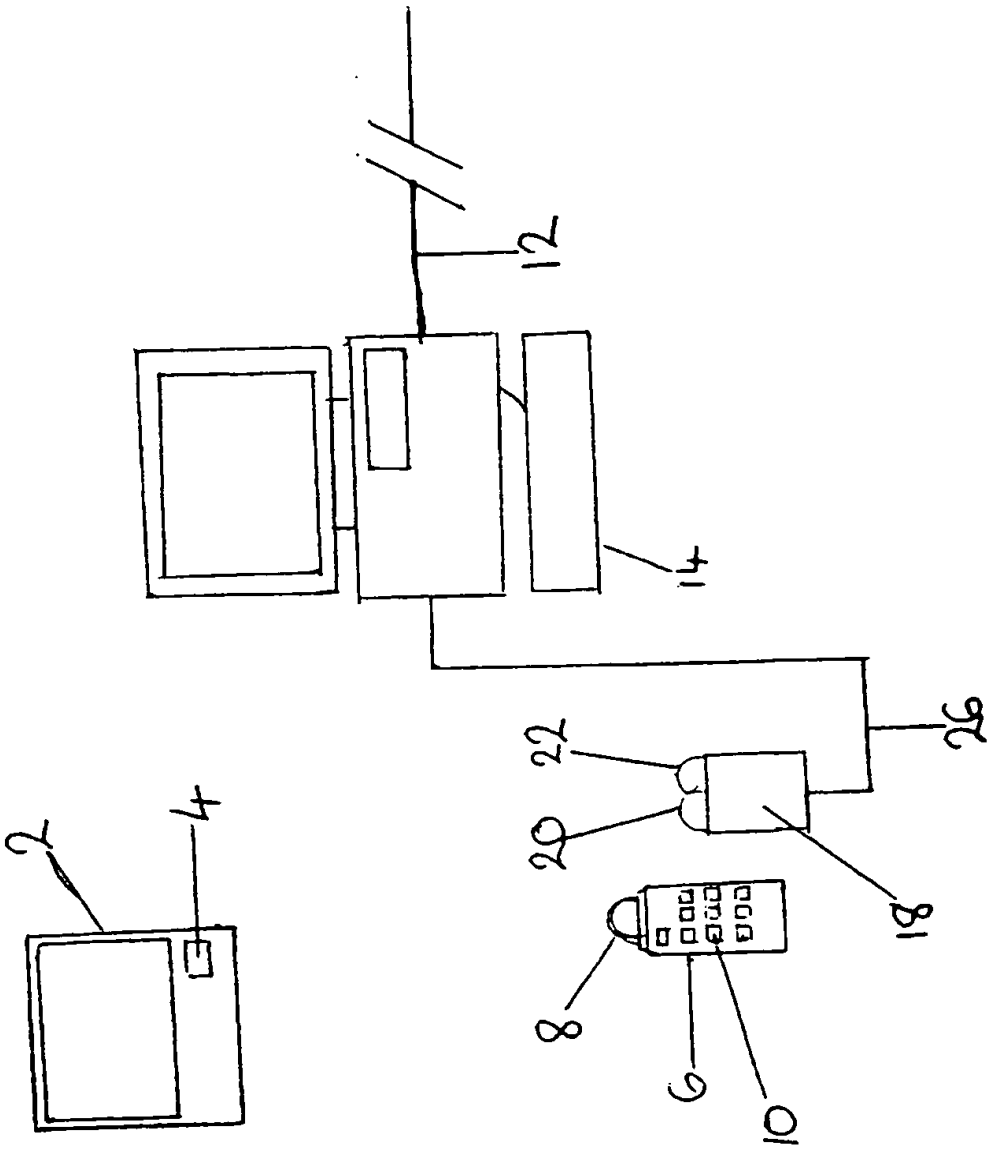

Fig 2.

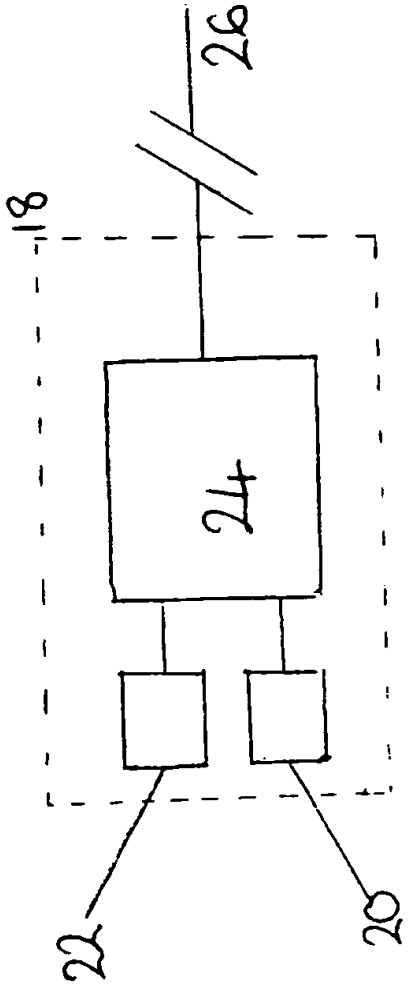

Fig 2a

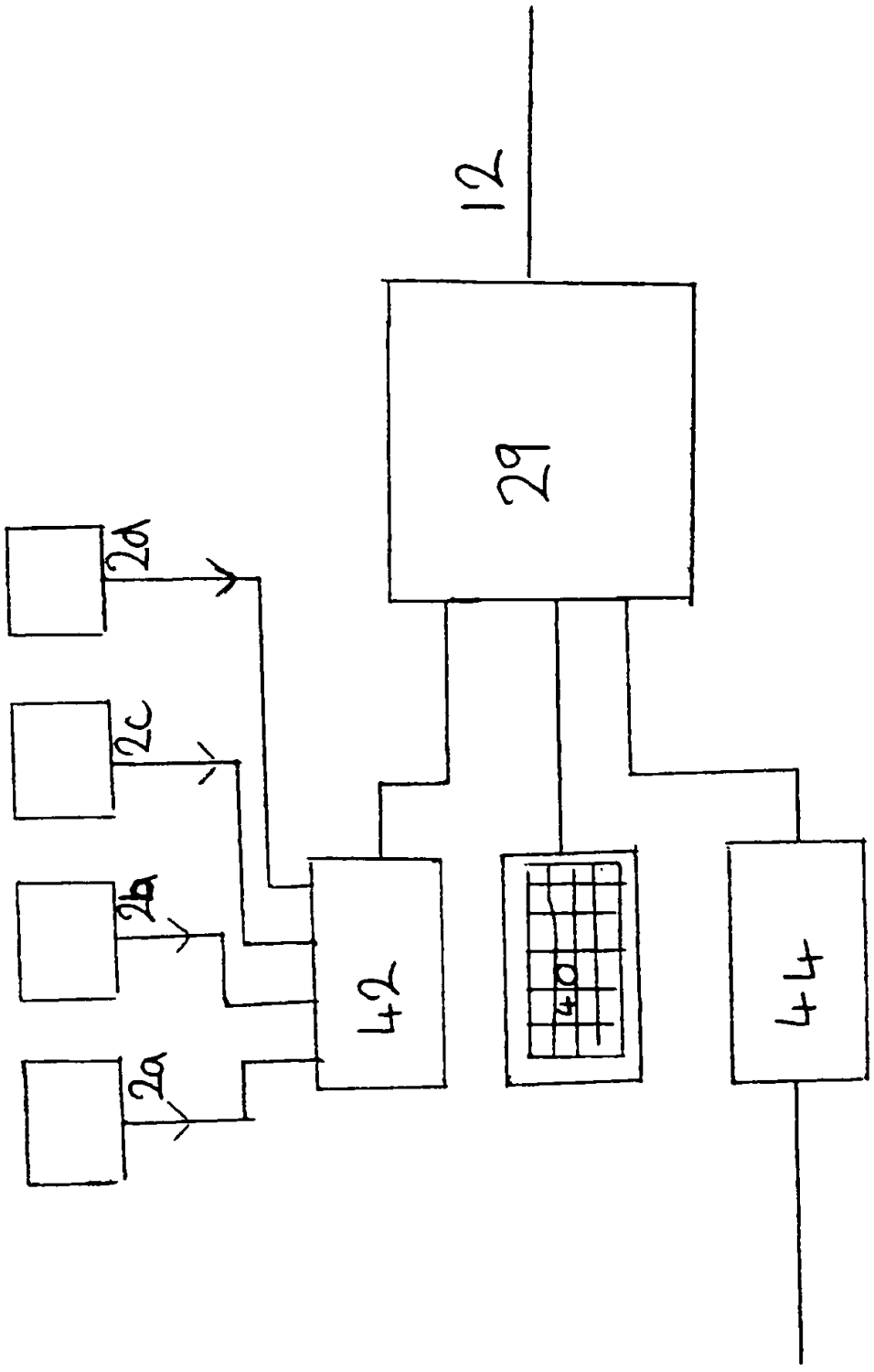

Fig 3.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ 00/00025

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl[7]: H04N 5/60, 5/44, 7/173

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPAT : (TV? or TELEVISION?) AND (CONTROL+) AND (DATA NETWORK? or INTERNET or MULTICAST+ or CABLE) AND (SET? or ADVERTIS+ or EPG or AD?)
INSPEC : (TV? or TELEVISION?) AND (CONTROL+) AND (DATA NETWORK? or INTERNET or MULTICAST+ or CABLE) AND (SET? or ADVERTIS+ or EPG or AD?)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	US 5892536 A (LOGAN et al) 6 April 1999 Column 1, line 65-column 13, line 25	1-20
X	Derwent Abstract Accession No: 96-261123/27, Class T01, DE 29604082 U1 (SIEMENS NIXDORF INFORM AG) 30 May 1996 Abstract	1-3,11-13
P,A	WO 99/60782 A (EVOLVE PRODUCTS, INC) 25 November 1999 Page 4, line 17-page 47, line 22	1-20

[X] Further documents are listed in the continuation of Box C

[X] See patent family annex

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ 00/00025

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,A	WO 99/15968 A (WORLDGATE COMMUNICATIONS, INC) 1 April 1999 Page 1, line 25-page 19, line 11	1-20
A	WO 90/03706 A (RIGHT HEMISPHERE PTY LTD) 5 April 1990 Page 6, line 26-page 16, line 36	1-20

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/NZ 00/00025

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
US	5892536	NONE					
DE	29604082	NONE					
WO	99/60782	AU	11708/99				
WO	99/15968	AU	94739/98	US	5961603	AU	27244/97
		BR	9708551	CA	2251085	EP	893026
		NO	984723	US	5999970	WO	97/38529
WO	90/03706	AU	43369/89	EP	569350	US	5446488

END OF ANNEX